

CORRESPONDENCE

Two new species of Tachinidae (Diptera) from China

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Abstract Two new species from Liaoning, China, *Phyllomya nigripalpis* Liang & Zhang, **sp. nov.** and *Smidtia longicercus* Liang & Zhang, **sp. nov.**, are described as new to science, with photos of external morphological characters and terminalia of male. The type specimens are deposited in the Insect Collection of Shenyang Normal University (SYNU).

Key words Tachinids, *Phyllomya*, *Smidtia*, taxonomy, China.

Phyllomya Robineau-Desvoidy, 1830 and *Smidtia* Robineau-Desvoidy, 1830 are two large genera from the tribe Voriini of the subfamily Dexiinae and Winthemiini of Exoristinae (Diptera: Tachinidae), respectively. Both genera were reported by formers frequently, such as Crosskey (1976) recorded 2 species in *Phyllomya* and 3 species in *Smidtia* from Oriental Region, Shima (1988, 1996) separately reported 5 species in *Phyllomya* from Japan and Indo-Australian Region and 13 species in *Smidtia* from Japan. In 1993, Herting & Dely-Draskoyits listed 8 species in *Phyllomya* and 12 in *Smidtia* (= *Smidtia* + *Timavia*) in their book, *Catalogue of Palaearctic Diptera. Volume 13*. In China, both genera were recorded by Shima & Chao (1992) (8 species in *Phyllomya* from Yunnan), Chao & Liang (2003) (7 in *Smidtia*), and O'Hara *et al.* (2009) (9 in *Phyllomya* and 8 in *Smidtia*).

In the studying of tachinid specimens collected from Liaoning, China, two new species separately from *Phyllomya* and *Smidtia* are recognized and described, and their photos of external morphological characters and terminalia of male are given. The type specimens were deposited in the Insect Collection of Shenyang Normal University (SYNU).

The external morphological characters of tachinid adult were observed by Olympus SZX7 stereoscopic microscope equipped with an ocular micrometer, in order of description of the head, thorax, wing, leg and abdomen. The terminalia of male were dissected, and carried out following the method described in detail by O'Hara (2002) and preserved in glycerine in small plastic tubes pinned together with the specimens. The tachinid specimens (Diptera: Tachinidae) in this study were collected from Liaoning Province, Northeastern China and kept in SYNU.

The genera of Tachinidae were recognized by Tschorsnig & Richter (1998); the specimens were examined and dissected using an Olympus SZX7 microscope. Terminology follows McAlpine (1981) except that terms of the male terminalia follow Sinclair (2000).

Consecutive digital images of heads, abdomens and bodies of male adults were taken with a Leica 205A microscope and images were blended with Helicon Focus ver.3.10 ®, images were processing with Photoshop CS ver.12.0.1 ®.

Phyllomya Robineau-Desvoidy, 1830

Phyllomya Robineau-Desvoidy, 1830: 213, by monotypy. Type species: *Musca volvulus* Fabricius, 1794.

Metopomintho Townsend, 1927: 283, by original designation. Type species: *Metopomintho sauteri* Townsend, 1927.

Diagnosis. The genus is similar with its allied genus, *Stomina* Robineau-Desvoidy by following characters: eyes bare, parafacial setose over most of its length, arista plumose or bare, prosternum bare, inner anterior surface of fore coxa bare or mostly bare, but it is distinguished from the latter in the parafacial protruding forward, vibrissae at level of the lower margin of face, antenna distinctly longer than genal height, 4–5 postpronotal setae, 3 strongest basal setae arranged in a triangle.

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Received 30 June 2017, accepted 13 February 2018

Executive editor: Fuqiang Chen

***Phyllomya nigripalpis* Liang & Zhang, sp. nov.** (Figs 1–8)

Diagnosis. This species is similar to *P. palpalis* Shima & Chao distributed in Yunnan, by having 3 presutural and 3 postsutural dorsocentral setae, mid tibia with 2 anterodorsal setae, abdominal syntergite 1+2 without median discal seta. It is distinguished from the latter by having black palpus, broad genal height 0.37–0.43 of eye height, vein M from dM-Cu crossvein to its bend about 3 times distance between the bend and wing hind margin, cerci in dorsal view evenly narrowed to apex, in lateral view strongly curved ventrally.

Description. Body length 5.8–6.6 mm.

Male. Head. Anterior fronto-orbital plate, parafacial and gena densely covered with grayish white pollinosity; antenna dark brown to black, palpus black, prementum gleaming black, labellum brownish yellow. Eyes bare. Frons at the narrowest point 1/15–1/13 of head width, frontal vitta about equal to or narrower than fronto-orbital plate, parafacial nearly parallel-sided, nearly as wide as 1st flagellomere at middle, genal height 0.37–0.43 of eye height; occiput with 2–3 rows of black hairs below postocular setae. Ocellar seta proclinate, as long as 2/5–1/2 of eye height, inner vertical setae crossed, about as long as ocellar seta, outer vertical seta 0.5–0.6 times of length of inner vertical seta, not distinctly different from adhere postocular setae, prevertical and upper orbital seta absent, 11–12 frontal setae, lowest seta at level of base of pedicel; fronto-orbital plate with several black hairs on anterior outer portion, parafacial with a few short and fine black hairs on upper half, lower margins of face not protruding, vibrissae at level of the lower margin of face, a row of fine subvibrissae below the vibrissae; pedicel with a long seta, which about as long as antenna, 1st flagellomere about 1.5 times as long as wide, about twice as long as pedicel; arista thickened at basal 1/4–1/5, plumose, longest arisal hairs about as wide as 1st flagellomere; antenna falling short of lower margins of face by about length to pedicel, palpus about as long as antenna, prementum 2–2.5 times as long as wide, labellum larger.

Thorax black in ground color, thinly covered with grayish white pollinosity, with 5 dark longitudinal vittae on presutural area of scutum, middle three vittae merged on anterior 2/5 of postsutural scutum, scutellar black. Postpronotal lobe with 4–5 setae, 3 basal setae in a triangle, 2 presutural and 2 postsutural acrostichal setae, 3 presutural and 3 postsutural dorsocentral setae, 3 postsutural intra-alar setae, one prealar seta longer than the first postsutural intra-alar seta, 2 supra-alar setae, scutellum with 3 pairs of marginal setae, apical scutellar setae strongly and crossed, scutellum with a pair of small discal setae; prosternum and proepisternum bare, 2 katapisternal setae, anepimeral seta absent.

Wing hyaline, brownish yellow; tegula and basicosta black; calypters yellowish; halteres reddish yellow. Second costal sectors with small setulae ventrally, relative length of costal sections 2nd, 3rd and 4th approximately as 3.5: 10: 4.5, vein M from dM-Cu crossvein to its bend about 3 times distance between the bend and wing hind margin, basal node of vein R_{4+5} with 3–4 fine hairs dorsally and ventrally.

Legs black, fore pulvillus yellowish, fore tibia with 2 short anterodorsal setae, 2 long posterior setae; mid femur with 1 anteroventral seta, with a row of postervoentral setae on basal 1/2, mid tibia with 2 anterodorsal setae, 2 posterior setae, 1 ventral seta; hind tibia with a row of anterodorsal setae on basal 2/3, 2–3 strong setae among them, 3–4 posterodorsal setae (two strong among them), 2 ventral setae, and 3 strongly preapical dorsal setae, fore claws and pulvilli about as long as 5th tarsomere.

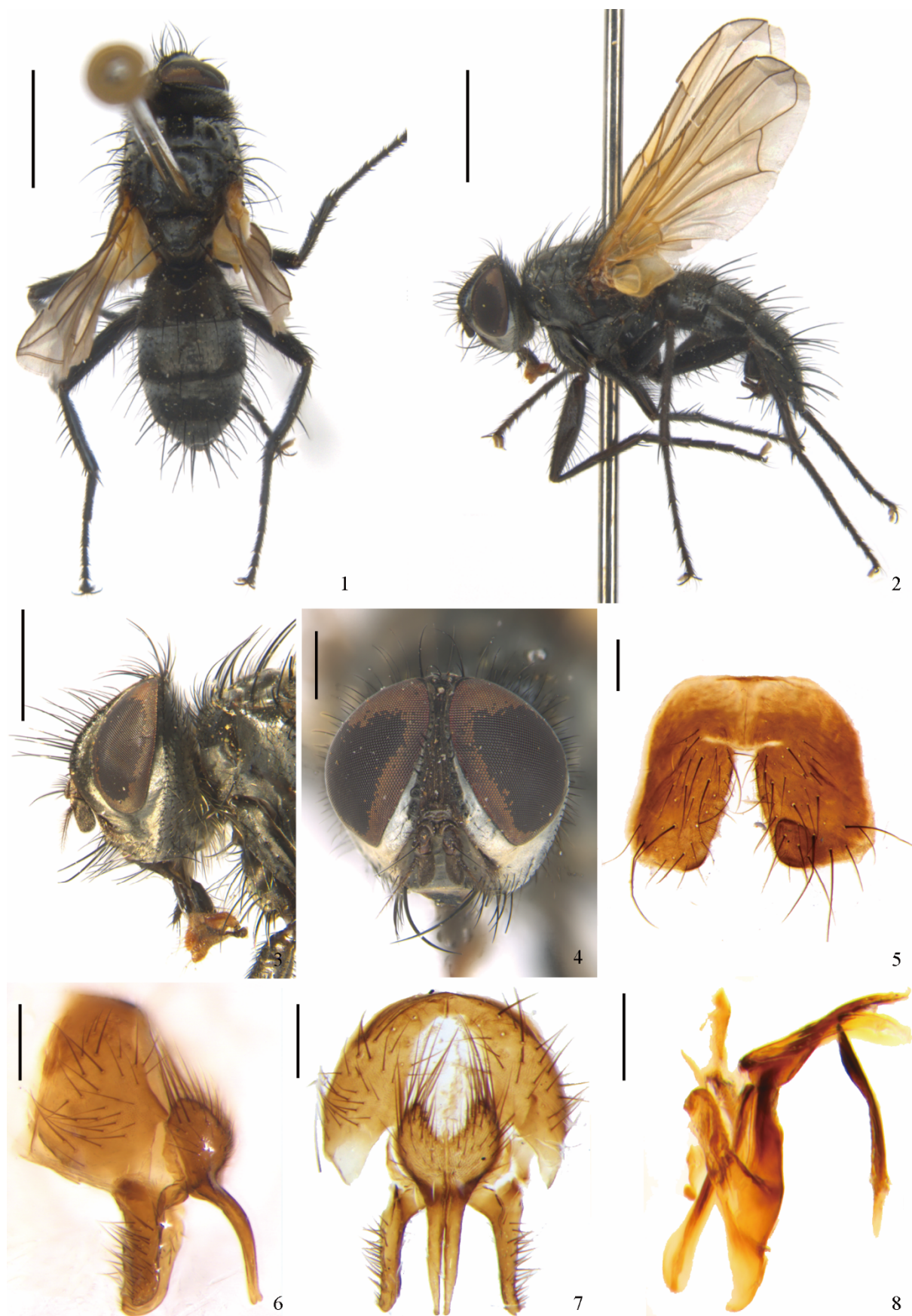
Abdomen long-ovoid, black in ground color, with long hairs, anterior 2/3–3/4 of 3th tergum, anterior 3/5–2/3 of 4th tergum and both sides of anterior 1/3 of 5th tergum with thinly grayish white pollinosity. Syntergum 1+2 medially excavated not to posterior margin, with a row of marginal setae; 3rd and 4th tergum each with a pair of median discal and a row of marginal setae, without lateral discal setae; 5th tergum separately with a row of discal and marginal setae; sternite 1 with black hairs; sternite 5 and male terminalia as in Figures 5–8.

Female. Differing from male as follows: Palpus black except for brown base. Frons about 1/4 of head width, gena about 1/3 of eye height; 2 proclinate outer orbital setae, 1 upward prevertical seta, outer vertical seta distinct, about 2/3 length of inner vertical seta, 6–7 frontal setae; claws and pulvilli shorter than 5th tarsomere; fore tibia with 3–4 anterodorsal setae, mid femur with 2–3 anterior setae, mid tibia with 3–4 anterodorsal setae, hind tibia with 3–5 anterodorsal setae, abdominal tergum separately with lateral discal setae.

Material examined. Holotype ♂, China, Liaoning, Qingyuan, Huangdaigou (41.83°N, 124.92°E; elev. 600–800 m), 26–31.V.2015, Zhang Chuntian (SYNU). Paratypes. 1♀, Liaoning, Benxi, Dashihu (elev. 450–600 m), 31.V.2008, Zhang Chuntian; 1♂, Liaoning, Benxi, Tiechashan (elev. 912 m), 13.VI.2010, Zhang Chuntian; 2♀, Liaoning, Qingyuan, Huangdaigou (41.83°N, 124.92°E; elev. 600–800 m), 26–31.V.2015, 2–6.VI.2016, Zhang Chuntian, Liang Houcan; 1♂, Beijing, Songshan, 1–5.V.2009, collector unknown (SYNU).

Distribution. China (Liaoning, Beijing).

Etymology. Specific epithet is dedicated to diagnosis of this species, Latin *niger* (=black) + *palp* (=palpus).



Figures 1–8. *Phyllomya nigripalpis* Liang & Zhang, **sp. nov.**, male. 1–2. Body in dorsal and lateral views. 3–4. Heads in lateral and anterior views. 5. Sternite 5. 6–7. Cerci, surstyli and epandrium in lateral and caudal views. 8. Aedeagal apodeme, hypandrium, pregonite, postgonite, basiphallus, distiphallus. Scale bars: 1–2=2 mm; 3=1 mm; 4=0.5 mm; 5–8=0.2 mm.

***Smidtia* Robineau-Desvoidy, 1830**

Smidtia Robineau-Desvoidy, 1830: 183, by designation of Desmarest, 1848. Type species: *Smidtia vernalis* Robineau-Desvoidy, 1830 [= *Tachina conspersa* Meigen, 1824].

Timavia Robineau-Desvoidy, 1863: 257, by original designation. Type species: *Smidtia flavipalpis* Robineau-Desvoidy, 1848 [= *Tachina amoena* Meigen, 1824].

Omotoma Lioy, 1864: 1338, by designation of Townsend, 1916. Type species: *Tachina amoena* Meigen, 1824.

Diagnosis. Eye covered with dense long hairs, parafacial with hairs on its upper half or below; arista about as long as antenna, thickened on less than basal three-fifths; occiput with one or two rows of black setulae behind the postocular seta row; postpronotum with five bristles, the three strongest of them arranged in a triangle; 3 presutural and 3–4 postsutural dorsocentral setae; katapisternum with three setae; katapimeron with hairs on its anterior 2/3 or more; outer margin of lower calypter not exceptionally convex; mid tibia with 3–5 anterodorsal setae, hind tibia with comb-like row of anterodorsal setae of rather uniform length, with a bristle at midlength about twice as long as the other anterodorsal setae, or anterodorsal setae on hind tibia irregular in length; abdomen with erect hairs on dorsum, tergite 5 more or less conical, entirely black.

***Smidtia longicercus* Liang & Zhang, sp. nov.** (Figs 9–16)

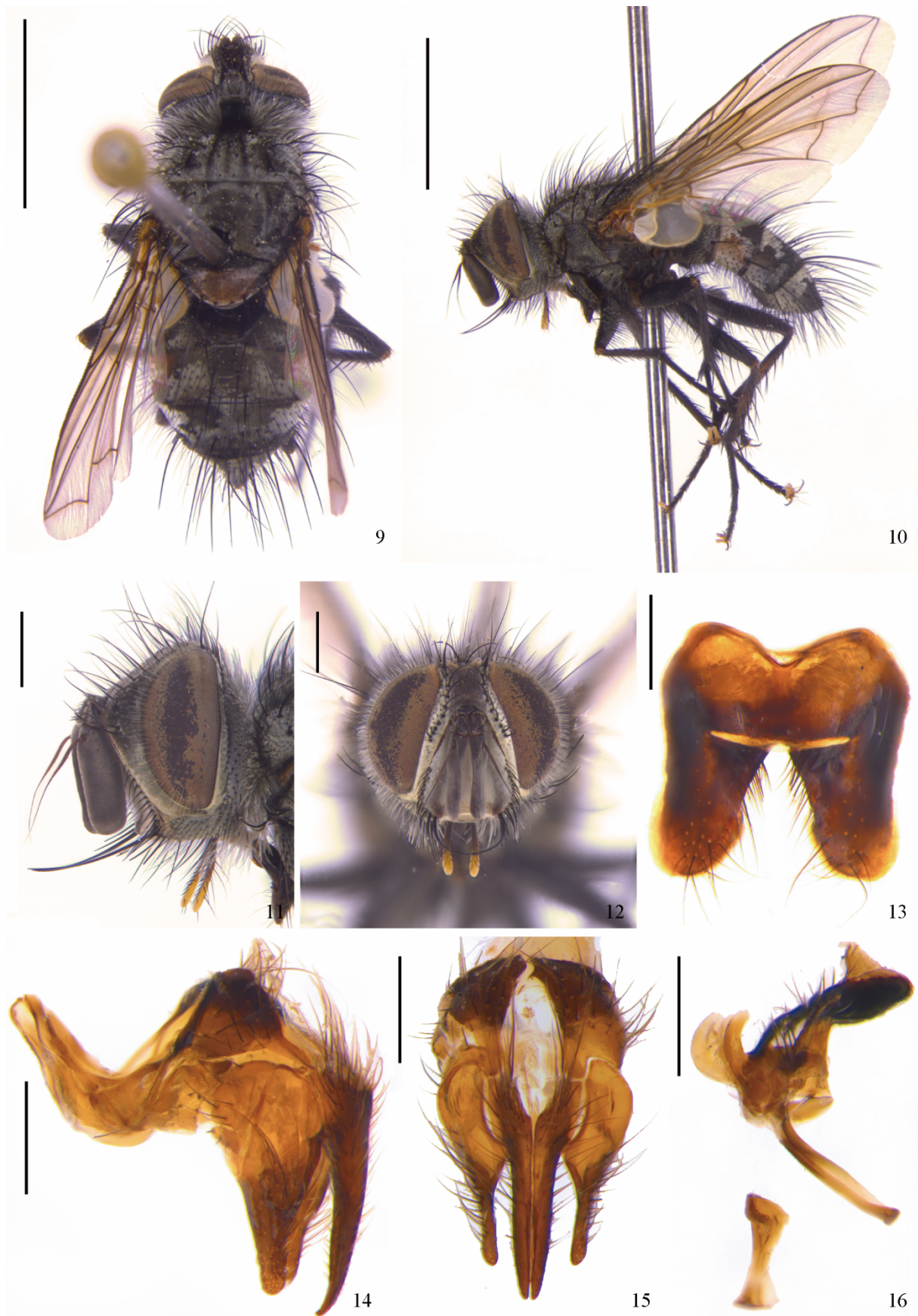
Diagnosis. This species resembles *S. magnicornis* (Mensil) from Japan by the parafacial with sparsely short hairs on upper 1/2, 1st flagellomere 4 to 5 times as long as pedicel, 3 presutural and 3 postsutural dorsocentral setae. It is distinguished from the latter by having larger body and narrow frons 0.23–0.25 of head width, tegula and basicosta dark brown, tibiae reddish yellow medially, darkened basally and apically, cerci longer than surstylus, and wider apically.

Description. Body length 8–10 mm.

Male. Head. Frontal vitta brown-black, fronto-orbital plate and parafacial covered with grayish yellow white pruinosity, antenna brown-black, gena covered with gray pruinosity, lunule brown-black; arista brown to dark brown, palpus reddish yellow, darkened at base; prementum gleaming black. Eye covered with dense yellowish fine long hairs. Frons length slightly shorter than face height in profile, frons at the narrowest point 0.23–0.25 of head width; frontal vitta about twice as wide as fronto-orbital plate at middle; parafacial slightly narrower than 1st flagellomere wide in anterior view, 0.5–0.67 of 1st flagellomere wide, 0.4–0.5 as wide as 1st flagellomere at middle height in lateral view; genal dilation, its height 0.20–0.22 of eye height, with fine long black hairs; fronto-orbital plate covered with small black hairs; parafacial with sparsely short hairs on upper 1/3–2/5; 10–11 pairs of frontal setae, lowest seta nearly level with base of arista; ocellar setae developed, proclinate and situated between anterior and posterior ocelli, as long as or slightly longer than frontal seta, about 3/5 of eye height; a pair of postocellar setae, weaker than ocellar setae; ocellar triangle area with black hairs; inner vertical seta 3/5–2/3 of eye height, outer vertical seta fine and long, 1/2–2/3 as long as inner vertical seta; postocellar setae fine; occiput covered with a row of black setulae behind postocular setae and most are long whitish hairs; vibrissa nearly level with lower margin of face, and 7–8 subvibrissae below vibrissa; facial ridge with short setae on lower 1/2–3/5. Antenna 1st flagellomere broad, about 3 times as long as wide, about 5 times as long as pedicel in profile, pedicel with short black setulae; arista bare, about as long as antenna, thickened on basal 1/3–2/5, 2nd aristal sector as long as wide; palpus rhabditiform and slender, slightly swollen at apex half, slightly shorter than 1st flagellomere, covered with black hairs; prementum 2.0–2.5 times as long as wide; labellum larger, about as long as prementum, with golden long hairs.

Thorax. Black in ground color, dorsum rather dense grayish white pollinose, covered with short and erect black hairs, with 5 black longitudinal vittae, middle three vittae extending to anterior 1/2 of postsutural scutum, scutellum dark brown at base, reddish brown at apical 2/3; anterior spiracle dark brown, posterior spiracle brownish yellow. Postpronotal lobe with 5 setae, 3 strongest basal setae setting in a triangle; 3 presutural and 3 postsutural acrostichal setae; 3 presutural and 3 postsutural dorsocentral setae; 1 presutural and 3 postsutural intra-alar setae, 3 supra-alar setae; first supra-alar seta longer than notopleural setae and first postsutural intra-alar seta; scutellum with a pair of fine discal setae, slightly longer than scutellum, and 4 pairs of marginal scutellar setae, apical scutellar setae suberect and crossed, 0.4–0.5 times as long as subapical scutellar seta, subapical scutellar seta strong and parallel, 3.0–3.2 times as long as scutellum, a pair of lateral scutellar setae about as long as apical scutellar setae, basal scutellar seta about as long as subapical scutellar seta, distance between subapical scutellar setae longer than that between subapical and basal scutellar setae; prosternum about 1.5 times as long as wide, with hairs on sides, proepisternum bare; 3 katapisternal setae, katapimeron mostly with hairs.

Wing. Long-narrow, hyaline, slightly tinged with pale brown; tegula and basicosta dark brown, lower calypter developed, pale yellowish white. Costal spine small, about 1/2 length of crossvein r-m; second costal section bare ventrally; relative length of costal sections 2nd, 3rd and 4th approximately as 1: 2.4: 1; R₁ bare; base of vein R₄₊₅ with 2–3 setulae dorsally and ventrally; bend of vein M nearly right angle and without fold or appendix, cell r₄₊₅ open; vein M from dm-cu



Figures 9–16. *Smidtia longicercus* Liang & Zhang, **sp. nov.**, male. 9–10. Body in dorsal and lateral views. 11–12. Heads in lateral and anterior views. 13. Sternite 5. 14–15. Cerci, surstyli and epandrium in lateral and caudal views. 16. Ejaculatory apodeme, aedeagal apodeme, hypandrium, pregonite, postgonite, basiphallus, distiphallus. Scale bars: 9–10 = 2 mm; 11–12 = 0.5 mm; 13–16 = 0.2 mm.

crossvein to its bend about 1.5 times distance between the bend and wing hind margin.

Legs. Black, slender; tibiae reddish yellow medially, darkened basally and apically; pulvilli dull yellowish; fore claw and pulvillus longer than 5th tarsomere. Fore tibia with preapically anterodorsal setae distinctly shorter than preapically dorsal setae, 2 posterior setae, 2 short posterodorsal setae; mid tibia with 3–5 anterodorsal setae (three strong among them), 2–4 posterodorsal setae (two strong among them), and 1 ventral setae; hind tibia with a row of anterodorsal setae (submedian one strong), 3 posterodorsal setae, low one strong, 2 preapically dorsal setae.

Abdomen. Long ovate, black in ground color, dorsum thinly and unevenly gray pruinosity; 3rd tergum with dark marking on median portion and reddish yellow markings on lateral dorsal portions; tergite 5 more or less cone; each tergum gleaming black in posterior margin; abdomen with long setae, discal and marginal setae longer than each tergum. Syntergum 1+2 medially excavated to posterior margin, with 2 median marginal and a pair of lateral marginal setae; 3rd tergum with a pair of median discal and median marginal setae, and 1–2 lateral marginal setae; 4th tergum with a pair of strong median discal and a row of marginal setae; 5th tergum with a row of marginal setae and irregular discal setae. Sternite 5 and male terminalia as in Figures 13–16.

Material examined. Holotype ♂, China, Liaoning, Xiuyan, Mt. Yaoshan (41.63°N, 123.42°E; elev. 400–800 m), 19.V.2007, Hao Jing (SYNU). Paratypes. 1♂. China, Liaoning, Qingyuan, Huangdaigou (elev. 600–800 m), 26–31.V.2015, Li Xin (SYNU).

Distribution. China (Liaoning).

Etymology. Specific epithet is dedicated to diagnosis of this species, Latin *longus* (=long) + *cercus* (=cerc, Greek *kerkos*).

Funding This article was supported by the National Natural Science Foundation of China (31272279, 31750002).

Acknowledgement We are thankful to two anonymous referees and the editor, Dr. Fuqiang Chen, for their critical review and careful editing and help. Our thanks are extended to Hao Jing and Li Xin who collected the type specimens.

Reference

- Chao, C.M., Liang, E.Y. 2003. A study on the Chinese genus *Smidtia* Robineau-Desvoidy (Diptera, Tachinidae). *Acta Zootaxonomica Sinica*, 28: 152–158.
- Crosskey, R.W. 1976. A taxonomic conspectus of the Tachinidae (Diptera) of the Oriental Region. *Bulletin of the British Museum (Natural History), Entomology*, Supplement 26: 1–357.
- Herting, B., Dely-Draskovits, Á. 1993. Family Tachinidae. In: Soós, Á., Papp, L. (eds.), *Catalogue of Palaearctic Diptera. Volume 13. Anthomyiidae–Tachinidae*. Hungarian Natural History Museum, Budapest. pp. 118–458.
- Lioy, P. 1864. I ditteri distribuiti secondo un nuovo metodo di classificazione naturale. [Cont.]. *Atti dell' I.R. Istituto Veneto di Scienze, Lettere ed Arti*, (3)9: 1311–1352.
- McAlpine, J.F. 1981. Morphology and terminology—adults. In: McAlpine, J.F., Peterson, B.V., Shewell, G.E., Teskey, H.J., Vockeroth, J.R., Wood, D.M. (eds.), *Manual of Nearctic Diptera. Vol. 1. Research Branch, Agriculture Canada, Monograph 27*, pp. 9–63.
- O'Hara, J.E. 2002. Revision of the Polideini (Tachinidae) of America north of Mexico. *Studia Dipterologica*, Supplement 10: 1–170.
- O'Hara, J.E., Shima, H., Zhang, C.T. 2009. Annotated catalogue of the Tachinidae (Insecta: Diptera) of China. *Zootaxa*, 2190: 1–236.
- Robineau-Desvoidy, J.B. 1830. Essai sur les myodaires. *Mémoires présentés par divers Savans à l'Académie Royale des Sciences de l'Institut de France. Sciences Mathématiques et Physiques*, Sér. 2, 2: 1–813.
- Robineau-Desvoidy, J.B. 1863. *Histoire Naturelle des diptères des Environs de Paris*. Tome premier. V. Masson et fils, Paris, F. Wagner, Leipzig, and Williams & Norgate, London. xvi + 1143 pp.
- Shima, H. 1988. Some remarkable new species of Tachinidae (Diptera) from Japan and the Indo-Australian Region. *Bulletin of the Kitakyushu Museum of Natural History*, 8: 1–37.
- Shima, H. 1996. A systematic study of the tribe Winthemiini from Japan (Diptera, Tachinidae). *Beiträge zur Entomologie*, 46: 169–235.
- Shima, H., Chao, C.M. 1992. New species of Tachinidae (Diptera) from Yunnan Province, China. *Japanese Journal of Entomology*, 60: 633–645.
- Sinclair, B.J. 2000. 1.2. Morphology and terminology of Diptera male terminalia. In: Papp, L., Darvas, B. (eds.), *Contribution to a Manual of Palaearctic Diptera (with special reference to flies of economic importance). Volume 1. General and Applied Dipterology*. Science Herald, Budapest. pp. 53–74.
- Townsend, C.H.T. 1927. New muscoid flies in the collection of the Deutsches Entomologisches Institut in Berlin. *Entomologische Mitteilungen*, 16: 277–287.
- Tschorsnig, H.P., Richter, V.A. 1998. Family Tachinidae. In: Papp, L., Darvas, B. (eds.), *Contributions to a Manual of Palaearctic Diptera (with special reference to flies of economic importance). Volume 3. Higher Brachycera*. Science Herald, Budapest. pp. 691–827.